

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In re

Amendment of Part 90 of the  
Commission's Rules to Adopt  
Regulations for Automatic  
Vehicle Monitoring Systems

PR Docket No. 93-61  
RM-8013

To: The Commission

**COMMENTS OF AD HOC GAS DISTRIBUTION UTILITIES COALITION  
ON WIDEBAND LMS PROPONENTS' SO-CALLED COMPROMISE PROPOSAL**

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### Summary

An ad hoc coalition of natural gas distribution utilities ("Gas Utilities") submit their comments in opposition to the so-called "compromise proposal" filed June 23, 1994, in this proceeding by four wideband location and monitoring service ("LMS") proponents. As the Gas Utilities show herein, the proposal is neither new, nor is it a compromise. Rather, it appears to be merely a repackaging of Airtouch Teletrac's Reply Comments. The technical presentation submitted to support the proposal is both undocumented and flawed. Moreover, the submission wholly fails to address the legitimate concerns previously voiced by the Gas Utilities and other Part 15 users in this proceeding that Part 15 devices, including the Automatic Meter Reading devices used by the Gas Utilities, will be forced out of the 902-928 MHz band by the proposed high powered LMS systems. Inasmuch as the interference concerns of the Part 15 users is not addressed adequately by the LMS proponents' submission, the Gas Utilities urge the Commission to order the LMS proponents and the Part 15 community to engage in testing under the Commission's auspices to determine the actual likelihood of interference to and from Part 15 and LMS equipment so that either an actual compromise may be negotiated, or the Commission will be in the position to decide this proceeding on the basis of hard data rather than lobbying pitches.

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**COMMENTS OF AD HOC GAS DISTRIBUTION UTILITIES COALITION  
ON WIDEBAND LMS PROPONENTS' SO-CALLED COMPROMISE PROPOSAL**

An ad hoc coalition of natural gas distribution utilities ("Gas Utilities") by counsel, submit their comments on the so-called "compromise proposal" filed June 23, 1994, by four wideband location and monitoring service ("LMS") proponents. See Letter to Ralph Haller (June 23, 1994). As the Gas Utilities show below, the proposal is neither new, nor is it a compromise. Rather it is an undocumented and flawed analysis which wholly fails to address the legitimate concerns previously voiced by the Gas Utilities and other Part 15 users in this proceeding. The Commission should not be misled by this latest public relations ploy. Rather, the Commission should order the LMS proponents and the Part 15 community to engage in testing under the Commission's auspices to determine the actual likelihood of interference to and from Part 15 and LMS equipment so that either an actual compromise may be negotiated, or the Commission will have sufficient information to render a decision based on hard data rather than lobbying pitches.

**I. Introduction.**

1. On June 23, 1994, four LMS proponents submitted a document called "LMS Consensus Position on Part 15 Interference."

("Consensus Paper"),<sup>1/</sup> in which they purport to offer a compromise to alleviate Part 15 users' concerns regarding the potential of Part 15 users to interfere with wideband LMS systems in the 902-928 MHz band. The supposed compromise is that the LMS licensees would accept as non-interfering, signals of less than -101 dBm in the case of near-continuous Part 15 emissions, and -91 dBm in the case of emissions of less than one second in any 10 second interval from any Part 15 device.<sup>2/</sup> With respect to emissions exceeding the specified levels, the LMS proponents would agree to a Commission imposed obligation on themselves and Part 15 users to negotiate in good faith to eliminate harmful interference caused by Part 15 equipment to LMS service providers. If negotiations are unsuccessful, the LMS proponents suggest the parties may either mutually agree to submit the matter to binding arbitration or one or the other may submit the matter to the FCC for resolution.<sup>3/</sup>

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<sup>1/</sup> The Consensus Paper does not bear any information concerning the identity of its authors, other than identification of the LMS proponents themselves. Various factual and technical assertions are advanced in that document with no source identified. Twenty pages of graphs, labeled "Interference Measurement at LMS Receive Sites" are included with the Consensus Paper.

<sup>2/</sup> The Gas Utilities have previously explained, that the Itron Automatic Meter Reading ("AMR") system they employ emits a brief pulse after being interrogated by a collection system. Thus, as to those units, the -91 dBm signal level would apply.

<sup>3/</sup> It is suggested that the FCC's alternative dispute resolution procedure could be employed. That procedure, of course, requires the concurrence of both parties to a dispute. See Alternative Dispute Resolution, 69 Rad. Reg. 2d (P&F) 1215 (1991), clarified, 70 Rad. Reg. 2d (P&F) 1419 (1991).

2. The Consensus Paper purports to show that actual cases of interference from Part 15 devices to LMS systems has been negligible, that no Part 15 users have been required to date to cease operation, and that the LMS licensees have been reasonable in seeking to accommodate Part 15 users found to be interfering with their systems. Attached to the Consensus Paper is an additional document, entitled "Further Analysis of Interference of Part 15 Devices and LMS Wideband Systems: Probability of Interference," authored by G.K. Smith ("Smith Paper"). That document suggests that Part 15 devices generally would suffer interference between themselves before they could create a reasonable likelihood of interference with wideband LMS systems.<sup>4/</sup> Smith Paper at 18-23. The report is silent as to the likely interference which may be caused to Part 15 devices by LMS systems themselves.

**II. This latest wideband LMS filing contains nothing new.**

3. The latest ex parte submission by the wideband LMS proponents contains nothing new of substance. In its March 29, 1994 Reply Comments in this proceeding, Pactel (now Airtouch) Teletrac, made the same argument, downplaying the likelihood of interference to its system from Part 15 devices, which it supported

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<sup>4/</sup> The Smith Paper, at 23, states that at least 79 AMR devices could exist per square mile without causing interference between each other. That statement ignores that AMR devices are encoded to be awakened by a collector/receiver, and transmit only upon specific interrogation. Accordingly, many more AMR devices per square mile than the Smith Paper indicates may co-exist with each other. Otherwise, it would not have been possible to install AMR device in large, multistory apartment buildings, as many Gas Utilities have done.

with the same inadequately documented factual assertions.<sup>2/</sup> Having failed to alleviate this legitimate concern in its reply comments, Airtouch has now repackaged those comments and convinced the other wideband LMS proponents to join its argument, apparently in the belief that if it continues to repeat the same unsupported argument enough times and in enough ways, eventually it will be accepted without regard to its validity.

**III. The LMS proponents' "compromise" proposal is not a compromise.**

4. A compromise requires a party to make a concession so that the opposing party may also make a concession to come to -- or at least come closer to -- an agreement. The LMS proponents' so-called compromise is not a compromise in any sense of the word. The LMS proponents have not made any concession. What they have done is articulate two co-channel interference thresholds for their systems. They indicate that their systems will not suffer destructive interference from a continuous co-channel signal of -101 dBm, or an intermittent signal of -91 dBm. And from that they magnanimously offer to accept co-channel signal levels below these interference thresholds. That is simply no concession. The LMS proponents would have no right under any circumstances, to complain of signal levels which do not interfere under any circumstances, with their systems.<sup>3/</sup>

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<sup>2/</sup> See Teletrac Reply Comments at 5-7 (March 29, 1994).

<sup>3/</sup> The -101 and -91 dBm thresholds suggested by the LMS proponents are significantly more restrictive than Pinpoint Communications, one of their numbers, has previously suggested. In its March 29, 1994 Reply Comments at 33, (continued...)

proponents are attempting the needs of the Part 15 Community. They are not.

**IV. The LMS submission is technically flawed.**

7. Even if the LMS proponents' "compromise" proposal actually proposed a compromise, the Gas Utilities would be hesitant to suggest the Commission embrace it because the technical documentation submitted with the filing suffers from serious flaws rendering its conclusions suspect.

8. Attached herewith as Exhibit I is the Affidavit of Thomas G. Adcock, P.E., Director of Engineering of the Law Firm of Lukas, McGowan, Nace & Gutierrez, Chartered. Mr. Adcock's affidavit shows that he has many years of experience designing, constructing, evaluating and operating wireless communications services.<sup>2/</sup> In his affidavit, Mr. Adcock presents a detailed technical analysis of

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<sup>2/</sup> Indeed, among other accomplishments, he has personally supervised the design and construction of more than 80 cellular systems. He has more than 37 years experience in mobile communications, including positions with the U.S. Department of Defense and NATO. He has lectured extensively on wireless communications technologies, submitted expert testimony to this agency and offered expert testimony in various judicial proceedings. See Exhibit I at 1.



5. Likewise, the LMS proposal that Part 15 and LMS parties negotiate in the event of an interference complaint is not a concession. The Commission expects parties to cooperate in resolving interference complaints. It is no concession for a party to agree to do that which the Commission already expects of it. Similarly, it is no concession for the LMS proponents to suggest that in the event of an interference complaint, the parties could mutually agree to seek binding arbitration. Nothing would prevent the LMS providers from declining to agree to arbitration once they no longer had any public relations need to convince the Commission they will treat Part 15 users fairly. A true concession would be to accept a condition on any permanent license to enter into binding arbitration with respect to an interference complaint should a Part 15 user so request.

6. Lastly, the suggestion that parties could submit the matter to the Commission for determination -- possibly under the alternative dispute resolution ("ADR") procedure -- suffers the same infirmity. It is no concession. After all, in the event of a disagreement concerning whether interference exists, the

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§(...continued)

Pinpoint suggested that signal levels of -90 dBm should be tolerated indefinitely, that signal levels of -70 dBm need not be tolerated, and that signal levels between -70 dBm and -90 dBm would be tolerated on the basis of the percent of time such signals were transmitted within a 10 second interval. Thus, far from a compromise toward the needs of Part 15 users, the LMS proponents have here urged an interference threshold more restrictive than one of their number previously suggested.

Commission is by law the decision-maker.<sup>2/</sup> In sum, the LMS proponents' so-called compromise is not a compromise at all; the LMS proponents are not conceding anything.<sup>3/</sup> Rather, it is merely a public relations ruse designed to make it appear that the LMS

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<sup>2/</sup> Significantly, the LMS proponents suggest no standard for resolving instances of alleged interference. Presumably, if brought to the FCC, those issues would be resolved by field measurements of the alleged interfering device to determine whether it complies with the applicable provisions of Part 15, and whether it radiates a signal which exceeds the LMS proponents' interference threshold protection of -91 or -101 dBm. If it does, the LMS proponents' position predictably would be that the Part 15 device must cease operation. It is not appropriate that this procedure differs from what the Commission would do absent this "compromise."

In addition, as with the suggestion that the parties could employ arbitration procedures, the alternative dispute resolution procedure the LMS proponents suggest, requires the consent of both parties to the dispute. See Note 3, *supra*. The Gas Utilities do not understand the LMS proponents to offer to consent in advance to ADR procedures as a condition of licensing -- which again would be a real concession, rather than a lobbying ploy.

<sup>3/</sup> Even if the wideband LMS proponents had tendered real concessions regarding arbitration and ADR, the Gas Utilities would question the utility of those concessions to most Part 15 users. Given the relatively low cost of individually owned Part 15 devices, few persons would be willing to spend the sums required to participate in either an arbitration proceeding, or in an FCC ADR proceeding. This would be especially true to users of consumer devices which might receive an allegation from a wideband LMS proponent that their Part 15 devices are causing interference.

Moreover, the Gas Utilities whether this Commission really desires a flood of additional disputes brought to its door as a result of this proceeding. It simply is poor use of scarce FCC resources to resolve a multitude of interference complaints. The Commission's goal in the adoption of final rules in this proceeding should be to minimize the likelihood of interference arising in the future, not merely push the issue off on ADR or compliance personnel.

the so-called compromise proposal and attached Consensus Paper.<sup>10/</sup> That analysis indicates that:

-- The entire submission focuses solely on the assumed concerns of Part 15 users that their Part 15 devices would interfere with wideband LMS systems. It does not in any way address the concerns of Part 15 device users with respect to interference by the relatively high powered, wideband LMS systems to operations of Part 15 devices.<sup>11/</sup>

-- Proper evaluation of the Consensus Paper is rendered difficult because of a lack of any technical compilation and analysis of the data presented. Standards of -101 dBm and -91 dBm that would represent interference from Part 15 user are proposed as minimum signal levels at LMS receiver sites. The -91 dBm level would apply only to Part 15 devices that transmit less than 10 percent of the time. Minus 101 dBm and -91 dBm represent relatively high signal levels; however, a collection of graphs of

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<sup>10/</sup> Also attached herewith as Exhibit II is the Affidavit of Dr. Solyman Ashrafi, Director of Emerging Technologies of the Law Firm of Lukas, McGowan, Nace & Gutierrez, Chartered. In his affidavit, Dr. Ashrafi demonstrates the existence of various methodological deficiencies in the Smith Paper, appended to the so-called compromise proposal. Specifically, that document suffers from the use of equations which are not properly justified (see, e.g., Exhibit II at 2-3 & 4), and assumptions which appear inappropriate (see, e.g., Exhibit II at 4). Accordingly, the Smith Paper provides inadequate documentation for the assertions and conclusions suggested by the LMS proponents.

<sup>11/</sup> This matter is discussed in more detail in Section V, below. Suffice it to say now that as Mr. Adcock suggests, the simultaneous operation of both high powered and low powered devices in the same band is a technically flawed concept. The high powered systems should be assigned spectrum separate from that used by the low powered devices. See Exhibit I at 2-3.

receive signal level samples of interference at LMS sites are included in the Consensus Paper.<sup>12/</sup> These examples include several instances of interfering signals above the -101 dBm and -91 dBm levels, apparently contradicting the statements contained in the submission of only a few instances of interference to LMS systems experienced to date. In fact, there appears to be at least ten instances of interfering signals above -101 dBm contained in the graphs. See Exhibit I at 3.

-- The Consensus Paper submitted by the LMS proponents suffers from key omissions of critical factors and contains flawed technical arguments, analysis and conclusions. The conclusions of the report are not supported by data and analysis but instead solely by selected and limited presentation of anecdotal information. The basis of assumptions or data taken as fact is not clearly stated nor susceptible to independent verification.<sup>13/</sup> To understand the data depicted in the 20 figures of the Consensus Paper one would need more information concerning these specific LMS systems and sites, e.g., the nature of the interfering signals, whether simultaneous interference from multiple Part 15 devices was

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<sup>12/</sup> These graphs are unclear and difficult to read, making analysis even more difficult.

<sup>13/</sup> For example, the Smith Paper appears to assume a minimum of six receive sites for LMS systems. See Smith Paper at 5. In actuality, such systems will have more sites. Since the conclusion that Part 15 devices will not interfere with such systems is based partly on the existence of site redundancy, it would appear that Part 15 devices which may interfere sporadically with only one site should not be considered to cause destructive interference. Yet, the Consensus Proposal apparently assumes destructive interference if signal levels are exceeded at only one site.

present, etc. None of that information, essential to determining the validity of the information set forth in the report, is included. See Exhibit I at 3-4.

-- Moreover, the evidence presented is unrepresentative. There are millions of Part 15 devices now in operation serving millions of persons. Millions more will soon be placed in service.<sup>14/</sup> Yet, the LMS proponents have chosen to rely on their experience in operating startup systems in only a few locations for a short period of time. That is insufficient practical experience to extrapolate a conclusion that future interference is unlikely. Indeed, the Gas Utilities are disturbed by the LMS proponents' discussion of their experience in providing service. Although they state that, as a group, they have some five years experience in designing, testing and operating LMS systems, it is clear that actual operation of these systems has been for a considerably more

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<sup>14/</sup> Itron, the maker of the device used by the Gas Utilities, has informed the Gas Utilities that more than three million units have been sold, and more than two million additional units are on order. A recent submission by the Utilities Telecommunications Council ("UTC"), reporting the results of a survey of its members, indicates that of the 36 utilities responding to the survey, 2,144,853 units were in service, representing an estimated investment of 179 million dollars. Moreover, these same 36 utilities expect to install an additional 13,066,300 units, at an additional 773 million dollar investment. Thus, this one Part 15 device alone is expected soon to have more than 15,000,000 units in service, with a total investment of almost a billion dollars. When all of the other Part 15 devices are considered which are likely to be in operation in the near term in this bandwidth, it is clear that the anecdotal approach on which the LMS proponents have chosen to rely to show that interference is unlikely to occur, is not appropriate.

limited period of time.<sup>15/</sup> In addition, the Consensus Paper is short on details of case studies concerning those interference issues which it reports to have arisen. Details such as distances between the Part 15 devices and the LMS facilities in question, and respective power levels, must be made available for a proper evaluation of the material presented.<sup>16/</sup> See Exhibit I at 4.

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<sup>15/</sup> Airtouch, whose latest proxy statement to shareholders described the company as in a startup stage (see Pacific Telesis Proxy Statement at F-39-40 (March 19, 1994) (Exhibit III, hereto), admits in the submission that operations have occurred only from two to three and one-half years for Los Angeles, Detroit, Chicago, Dallas and Miami, with San Diego still in the testing stage. No data at all are given concerning the length of operation of Mobilevision's and Pinpoint's systems in Washington, D.C., South Florida, Dallas and Chicago. However, in a December 1993 submission to this Commission, Pinpoint admitted its Washington, D.C. system had operated for only "several months" in 1993, with Special Temporary Authority. Thus, the LMS systems are still under development and are neither widespread throughout the country nor within those areas where AMR systems are operating in high numbers.

Indeed, at least with respect to the Itron AMR device used by the Gas Utilities, review of the UTC June 28, 1994 survey results shows relatively limited penetration of AMR into the specific markets where the LMS proponents indicate they have ongoing commercial operations. (See Consensus Paper at 4.) Accordingly, the LMS proponents' suggestion of more than 300,000 of these devices in those areas may be overstated. Similarly, widespread use of consumer Part 15 devices in this band has not yet reached a peak. Thus, the LMS proponents' assertions that they have not experienced interference from these devices is immaterial as they are not yet widely installed in those areas. They soon will be, however. Accordingly, resolution of interference potential is too critical an issue to be decided on the basis of experiences reported by LMS system operators in only a few markets which are not yet well penetrated with AMR and other 902-928 MHz Part 15 devices.

<sup>16/</sup> Significantly, in its March 29, 1994 Further Reply Comments at 18, Mobilevision admitted:

(continued...)

-- Rather than rendering a decision from anecdotal evidence, which does not represent the future landscape of this band, the Commission's evaluation should be made only after consideration of hard data in the form of controlled testings and experimentation. See Exhibit I at 5.

-- The Consensus Paper asserts that all cases of interference encountered so far by LMS systems were easily resolved by the LMS operator and Part 15 users without any "user of a Part 15 device ever [having] been required to cease operation," including, by retuning the Part 15 device at the LMS provider's cost.<sup>17/</sup> In the

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<sup>16/</sup>(...continued)

These [Part 15] devices, however, vary significantly in power usage and operating conditions: many are used in applications that will neither cause nor be affected by interference in relation to the operation of LMS systems; others will undoubtedly not be able to coexist on the same frequencies with such [LMS] systems.

It is not clear whether it is good science or good public relations which is responsible for Mobilevision's change of heart. The Gas Utilities fear it is the latter.

<sup>17/</sup> The claim that no Part 15 device has been forced to shut down appears disingenuous in light of one gas utility's experience with Teletrac discouraging installation of Part 15 devices near its facilities. In that case, Teletrac refused to allow a site owner to permit the installation of a Part 15 device relating to a system Southern California Gas Company was testing because of the nearby location of Teletrac equipment. This would appear to contradict both the assertions of the LMS proponents that interference from Part 15 devices is unlikely and their indication that they are not heavy handed in dealing with Part 15 users.

case of the AMR equipment used by the Gas Utilities, these devices are sealed and not susceptible to retuning.<sup>18/</sup> See Exhibit I at 6.

-- The statement that LMS subscriber unit growth will not increase interference, see page 3 of the "Consensus Proposal" at note 2, is misleading as LMS system operators plan to expand their subscriber numbers by expanding their geographic coverage in existing markets, and by adding additional markets. As more and more markets are included, many more LMS sites will be activated and the number of interference cases will greatly increase. And to the extent the statement has any validity, it is only in the case of interference to LMS systems by Part 15 devices. It is inaccurate with respect to the potential for LMS systems to interfere with the functioning of Part 15 devices, including the AMR equipment employed by the Gas Utilities. See Exhibit I at 7. The Gas Utilities discuss that problem below.

**V. The "Consensus Proposal" fails to address the concerns of the Gas Utilities that LMS stations will interfere with AMR equipment.**

7. As discussed above, the record in this proceeding indicates that various utility companies have invested, or plan to invest, some one billion dollars in installing AMR devices in their territories, to serve some 15,000,000 customers. AMR has important public interest benefits. It facilitates the provision of cost-effective service to utility customers. It encourages energy conservation. It promotes accurate billing for service, and it

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<sup>18/</sup> Moreover, even if they could be retuned, it does not appear the LMS proponents are willing to commit to bear the cost of so retuning.



enhances the safety of utility personnel and customers.<sup>19/</sup> Despite these advantages, the large capital investment required for AMR systems makes it challenging to demonstrate short term cost savings for such systems. If AMR systems are subject to significant interference from LMS systems, utilities would not be able to justify their installation and may have to scrap currently authorized AMR programs.<sup>20/</sup> Indeed, the existence of this proceeding, and the uncertainty it has generated concerning the continued efficacy of AMR programs, has caused some utilities to limit further investment in AMR. Although the Gas Utilities recognize that as Part 15 users they are not entitled to interference protection under the rules from licensed users, the Commission must nevertheless weigh whether it is in the public interest to render obsolete some one billion dollars of existing and planned investment in these communications devices which clearly serve important public interest purposes.<sup>21/</sup>

8. Unfortunately, nothing in the Consensus Paper addresses this key issue of the interference threat from LMS providers to

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<sup>19/</sup> Many utilities have targeted initial installation of AMR devices in high crime areas to protect the safety of utility personnel and property. In addition, it is increasingly difficult to do on-site reading because of access problems. AMR thus facilitates the security and convenience of utility employees and customers.

<sup>20/</sup> In such cases, these utilities would be placed in the no-win situation of writing off their investment in AMR.

<sup>21/</sup> Moreover, unlike the bulk of LMS equipment, which is produced in the Pacific Rim, the AMR devices are manufactured in the United States. Thus, U.S. jobs are at stake in this proceeding.

Part 15 devices, including the Itron AMR device used by the Gas Utilities.<sup>22/</sup> The physics of this issue are instructive.

9. The Itron AMR device transmits a 10 milliwatt (1/100 watt) spread spectrum signal using the 910 to 920 MHz segment of the 902 to 928 MHz band. Based only on free space loss (and therefore worst case), a propagation calculation for the distance to an interfering signal as identified by the LMS proponents for an Itron unit (i.e., -91 dBm or greater signal), would be approximately 1.8 miles. A "real world" study of the distance to the -91 dBm signal of an Itron unit mounted at six feet facing a 30 meter LMS receiver indicated a signal limit of significantly less, anywhere from under a quarter mile to approximately three-quarters of a mile, depending on the propagation method used and the terrain assumed.<sup>23/</sup>

10. By contrast, Teletrac's January 26, 1994, submission indicates that its forward link would broadcast continuously at 500 watts ERP. This is 50,000 times the power level of the Itron unit. Teletrac's mobile and calibration transmitters would broadcast at up to 10 watts ERP, 1,000 times the power of an Itron unit. Other

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<sup>22/</sup> Of even more critical public interest importance, the record in this proceeding is silent as to the likelihood of interference to Industrial, Scientific and Medical ("ISM") and like devices by LMS providers, a matter of increasing and critical public interest concern. See Exhibit IV (Wall Street Journal, "Clutter on Airwaves Can Block Working Of Medical Electronics: Reports Trace Interference to Cellular Phones, TV; Safeguards Are Spotty: A Heart Monitor That Failed (June 15, 1994)).

<sup>23/</sup> The propagation figures provided in this section were determined based on calculations performed by Dr. Ashrafi using various propagation models. See Exhibit II at 4-6.

LMS proposals suggest similar high power limits. Applying the same -91 dBm (for intermittent transmissions) and -101 dBm (for continuous transmissions)<sup>24/</sup> to these signals indicates free space interference contour ranges vastly in excess of those for the Itron unit. When discounted to real world values, the 500 watt continuous transmission forward links would appear to be able to saturate AMR receivers at distances of up to 23 miles,<sup>25/</sup> the ten watt continuous operation calibration transmitters would appear to be able to saturate AMR receivers at distances of up to 5.3 miles,<sup>26/</sup> while the ten watt non-continuous mobile transmitters would appear to be able to saturate AMR receivers at distances of up to 1.2 miles.<sup>27/</sup> Given the above discussion, it is clear that LMS systems offer a high likelihood of interference to AMR receivers, rendering them unable to obtain accurate readings. Yet, the LMS proponents have chosen totally to ignore this likelihood of interference.

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<sup>24/</sup> These figures are used for illustrative purposes. The Gas Utilities do not know the exact signal level which would cause interference to an AMR receiver.

<sup>25/</sup> The calculation set forth above assumes a 30 meter height above average terrain transmitter and a six foot receiver antenna height. It is based on the Hata propagation model.

<sup>26/</sup> This calculation assumes the calibration transmitter is located at 15 meters HAAT and the receiver antenna at two meters. See Exhibit II at Attachment 2.

<sup>27/</sup> This calculation assumes a two meter height for both the transmitter and receiver antennae.

**VI. The Commission should require tests to determine the actual likelihood of interference to and from Part 15 devices so its decision herein may be based on full and accurate data.**

11. The foregoing discussion demonstrates one point very clearly: the Commission does not yet have accurate and reliable data on which to base its decision in this proceeding. The Gas Utilities understand that this is a difficult proceeding for the Commission. They would prefer the Commission not to authorize wideband LMS systems at all in this band because of the likelihood of interference. The wideband LMS proponents on the other hand (1) imply interference is not a problem; and (2) ultimately believe Part 15 users must suffer any interference caused to LMS systems. The Commission may not be able to render a decision which will meet everyone's needs. If the Commission is forced to choose one party over another, the Gas Utilities believe the public interest favors their cause.<sup>28/</sup> Whether the Commission agrees or disagrees with the Gas Utilities, however, it should know the full ramifications of its actions and should act only on a full and complete record. That record does not now exist.

12. The Gas Utilities propose that the Commission mandate interference testing between LMS systems and Part 15 devices in

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<sup>28/</sup> Indeed, Teletrac's latest proxy statement indicates the company has not been successful in achieving adequate consumer acceptance of its service. Accordingly, Teletrac is retrenching its backing of the service laying off employees and reducing financial support. See Exhibit III, Proxy Statement at F-40.

accordance with the following plan.<sup>22/</sup> The Commission would issue a public notice directing all interested parties to a meeting to be chaired by a representative of the Office of Engineering and Technology ("OET"), who would arbitrate without right of appeal any dispute arising during the test period. The parties would together devise a testing plan covering all Part 15 and LMS equipment which any party desired to test, sharing the cost equally among themselves. If the number of devices to be tested were so numerous as to be impracticable, a representative sample of equipment would be tested.<sup>30/</sup> Following completion of the tests, the resulting data

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<sup>22/</sup> Both Part 15 users and LMS proponents have at various times proposed tests. Indeed, a test in the Washington area of AMR and LMS systems was to take place recently, but broke down over a disagreement concerning how the results would be reported. Tests conducted pursuant to a Commission mandate would avoid such problems.

<sup>30/</sup> Manufacturers or users would be required to provide, if known, the following minimum data for any device to be tested:

- A. Frequencies or frequency plan;
- B. Transmit and receive antenna characteristics, including gain and pattern;
- C. Sensitivity of the receiver (including performance as a function of signal to noise ratio in the presence of in-band and adjacent channel interference);
- D. Modulation scheme and symbol rate;
- E. In-band and out-of-band spectral characteristics;
- F. Sequence of communications events, their duration and respective statistics, including identification of failure conditions and recovery procedures for each event;

(continued...)

would be made available to any interested party for the cost of reproduction by the Commission's contract copying service. A public notice would announce the availability of the data. Interested parties would then be accorded a minimum of 30 days to comment on the data, and a minimum of 14 days to submit reply comments.

13. By adopting the foregoing testing plan, the Commission would develop sufficient data to verify or disprove the conflicting claims the parties have advanced. Thus, with that data, this agency would have sufficient information to decide this proceeding.

#### **VII. Conclusion.**

14. As the Gas Utilities have shown above, the LMS proponents' June 23, 1994 submission is not a compromise proposal. It contains nothing new of substance, and in any event is improperly documented. Moreover, it does not address the critical issue of interference to Part 15 devices by wideband LMS systems. What is needed to resolve this proceeding adequately is sufficient data for the Commission to determine whether interference actually is likely to occur. The Commission will then have full information to make the decision which best serves the public interest. Testing pursuant to the plan set forth above will accomplish that result.

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<sup>20</sup>(...continued)

- G. Typical scenarios in terms of distribution of units in urban and suburban environments, in and out-of-building deployments, antenna heights and distance between units comprising a link.

The above criteria were suggested by Teletrac in a December 22, 1993, letter to Dr. Jay Padgett of AT&T Bell Laboratories (Attached as Exhibit V hereto).

The Gas Utilities respectfully request the Commission to adopt that plan.

Respectfully submitted,

BAY STATE GAS COMPANY  
THE BERKSHIRE GAS COMPANY  
BLACKSTONE GAS COMPANY  
BOSTON GAS COMPANY  
BRISTOL AND WARREN GAS COMPANY  
BROOKLYN UNION GAS COMPANY  
CITY OF WESTFIELD GAS AND ELECTRIC LIGHT  
DEPARTMENT  
CITY OF HOLYOKE, MASSACHUSETTS GAS AND ELECTRIC  
DEPARTMENT  
COLONIAL GAS COMPANY  
COMMONWEALTH GAS COMPANY  
CONSUMERS POWER COMPANY  
CONNECTICUT NATURAL GAS CORP.  
ENERGYNORTH NATURAL GAS, INC.  
ESSEX COUNTY GAS COMPANY  
FALL RIVER GAS COMPANY  
FITCHBURG GAS AND ELECTRIC LIGHT COMPANY  
MINNEGASCO  
NORTHERN UTILITIES, INC.  
PHILADELPHIA GAS WORKS  
THE PEOPLES GAS LIGHT AND COKE COMPANY  
SOUTHERN CALIFORNIA GAS COMPANY  
THE PROVIDENCE GAS COMPANY  
THE SOUTHERN CONNECTICUT GAS COMPANY  
VALLEY GAS COMPANY  
VERMONT GAS SYSTEMS  
WAKEFIELD MUNICIPAL LIGHT DEPARTMENT  
WASHINGTON GAS LIGHT COMPANY  
YANKEE GAS SERVICE COMPANY

By: 

Elizabeth R. Sachs  
George L. Lyon, Jr.  
Their Attorneys

Lukas, McGowan, Nace & Gutierrez, Chartered  
1819 H Street, NW, Suite 700  
Washington, DC 20006  
(202) 857-3500  
July 18, 1994

**Exhibit I**



# AFFIDAVIT

**City of Washington** :

: **SS**

**District of Columbia** :

**I, THOMAS G. ADCOCK, P.E., having been first duly sworn, depose and state  
as follows:**

1. I am a registered Professional Engineer in Washington, D.C. and the Director of Engineering for the firm of Lukas, McGowan, Nace and Gutierrez, Chartered.

2. I graduated from the United States Military Academy at West Point, New York in 1957 with a Bachelor of Science degree, and from the Massachusetts Institute of Technology, Cambridge, Massachusetts in 1963 with a degree of Masters of Science in Electrical Engineering. In addition, I have completed post-masters degree courses at New York University and George Washington University, and am a Senior Member of the Institute of Electrical and Electronic Engineers.

3. I am familiar with the Federal Communications Commission's ("FCC's") rules including Part 15, and since 1982 have prepared or supervised the preparation of the technical portions of hundreds of applications, engineering statements and other submissions filed with the FCC.

4. On behalf of an ad hoc coalition of natural gas distribution utilities ("Gas Utilities"), I have reviewed a copy of a June 23, 1994 letter to the FCC's Chief of the Private Radio Bureau, Ralph Haller, from four Location Monitoring System ("LMS")